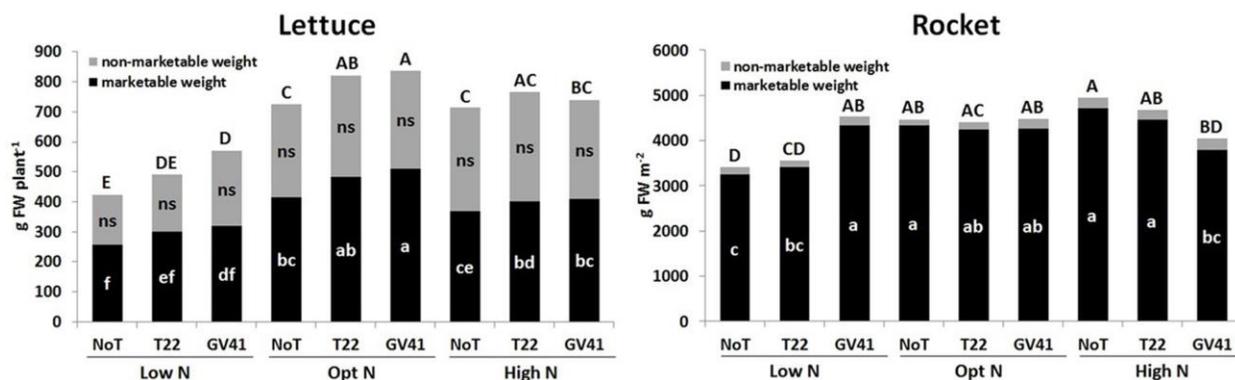


Trichoderma Trial Data Summary

Trichoderma and Fertilizer Combo Increases Leafy Green Quality

Conducted by Fiorentino et al.



Total marketable and non-marketable yield of lettuce and rocket as affected by N fertilization does and *Trichoderma* inoculation.

Italian researchers studied how *Trichoderma*-based product affected leafy greens in different fertilizer levels (low, normal, and excessive). They focused on two types of leafy vegetables: iceberg lettuce (*Lactuca sativa* L.) and rocket (*Eruca sativa* Mill.). The two have markedly different nutritional content, allowing researchers to see how crop selection plays a role. The researchers conducted the study in greenhouses.

The team inoculated the crop with *Trichoderma* strains *T. virens* (GV41) or *T. harzianum* (T22) and compared the results with non-inoculated plants.

Yield Results:

Trichoderma-based product, in particular GV41, increased lettuce and rocket yield in the unfertilized plots.

“Lettuce grown in absence of N fertilization demonstrated a significant yield increase when inoculated with GV41 (by 34% and 24% for total and marketable weight, respectively), and a moderate increase with T22 (by 16% and 17% for total and marketable weight, respectively),” the researchers report in their peer-reviewed journal article. The highest marketable lettuce fresh yield was recorded with either of the inoculations when plants were supplied with optimal levels of N.

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Citation:

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ABSTRACT: Microbial inoculants such as Trichoderma-based products are receiving great interest among researchers and agricultural producers for their potential to improve crop productivity, nutritional quality as well as resistance to plant pathogens/pests and numerous environmental stresses. Two greenhouse experiments were conducted to assess the effects of Trichoderma-based biostimulants under suboptimal, optimal and supraoptimal levels of nitrogen (N) fertilization in two leafy vegetables: Iceberg lettuce (*Lactuca sativa* L.) and rocket (*Eruca sativa* Mill.). The yield, nutritional characteristics, N uptake and mineral composition were analyzed for each vegetable crop after inoculation with Trichoderma strains *T. virens* (GV41) or *T. harzianum* (T22), and results were compared to non-inoculated plants. In addition, the effect of the Trichoderma-based biostimulants on microbes associated with the rhizosphere in terms of prokaryotic and eukaryotic composition and concentration using DGGE was also evaluated. Trichoderma-based biostimulants, in particular GV41, positively increased lettuce and rocket yield in the unfertilized plots. The highest marketable lettuce fresh yield was recorded with either of the biostimulant inoculations when plants were supplied with optimal levels of N. The inoculation of rocket with GV41, and to a lesser degree with T22, elicited an increase in total ascorbic acid under both optimal and high N conditions. *T. virens* GV41 increased N-use efficiency of lettuce, and favored the uptake of native N present in the soil of both lettuce and rocket. The positive effect of biostimulants on nutrient uptake and crop growth was species-dependent, being more marked with lettuce. The best biostimulation effects from the Trichoderma treatments were observed in both crops when grown under low N availability. The Trichoderma inoculation strongly influenced the composition of eukaryotic populations in the rhizosphere, in particularly exerting different effects with low N levels in comparison to the N fertilized plots. Overall, inoculations with Trichoderma may be considered as a viable strategy to manage the nutrient content of leafy horticulture crops cultivated in low fertility soils, and assist vegetable growers in reducing the use of synthetic fertilizers, developing sustainable management practices to optimize N use efficiency.